

WHAT IS CLAIMED IS:

1. An apparatus for providing support between a first structure and a second structure, comprising:

5 a first section having a first group of at least one magnetic frame member, the first section being coupled to the first structure; and

a second section having a second group of at least one magnetic frame member, the second section being coupled to the second structure; wherein

the first and second sections present magnetic force therebetween.

10 2. The apparatus of claim 1, wherein the second group of at least one magnetic frame member is provided within the first group of at least one magnetic frame member.

15 3. The apparatus of claim 2, wherein the first group of at least one magnetic frame member has a first direction of magnetic poles, the second group of at least one magnetic frame member has a second direction of magnetic poles, and the first direction is opposite to the second direction.

4. The apparatus of claim 3, wherein the first section includes a first number of at least one magnetic frame member, the second section includes a second number of at least one magnetic frame member, and a difference between the first number and the second number is no more than 1.

20 5. The apparatus of claim 4, wherein the first number is more than 1, the second number is more than 1, a first pitch of the magnetic frame members included in the first group is smaller than a second pitch of the magnetic frame members included in the second group.

25 6. The apparatus of claim 5, wherein a ratio of the second pitch to the first pitch is more than 1 and less than 1.5.

7. The apparatus of claim 3, wherein the first section has a third group of at least one magnetic core.

30 8. The apparatus of claim 7, wherein the third group of at least one magnetic core is provided within the second group of at least one magnetic frame member.

9. The apparatus of claim 8, wherein the third group of at least one magnetic core has a third direction of magnetic poles, and the third direction is the same as the first direction.

10. The apparatus of claim 9, wherein the first section includes a third number of at least one magnetic core, and the third number is the same as the first number.

11. The apparatus of claim 10, wherein the third number is more than 1, a third pitch of the magnetic frame members included in the third group is smaller than a second pitch of the magnetic frame members included in the second group.

12. The apparatus of claim 11, wherein a ratio of the second pitch to the third pitch is more than 1 and less than 1.5.

13. The apparatus of claim 12, wherein the first, second and third numbers are 4, 3 and 4, respectively.

14. A method of providing support between a first structure and a second structure, comprising:

coupling a first section to the first structure, the first section having a first group of at least one magnetic frame member; and

coupling a second section to the second structure, the second section having a second group of at least one magnetic frame member; wherein

20 the first and second sections present magnetic force therebetween.

15. The method of claim 14, wherein the second group of at least one magnetic frame member is provided within the first group of at least one magnetic frame member.

16. The method of claim 15, wherein the first group of at least one magnetic frame member has a first direction of magnetic poles, the second group of at least one magnetic frame member has a second direction of magnetic poles, and the first direction is opposite to the second direction.

17. The method of claim 16, wherein the first section includes a first number of at least one magnetic frame member, the second section includes a second number of

at least one magnetic frame member, and a difference between the first number and the second number is no more than 1.

18. The method of claim 17, wherein the first number is more than 1, the second number is more than 1, a first pitch of the magnetic frame members included in the first group is smaller than a second pitch of the magnetic frame members included in the second group.

19. The method of claim 18, wherein a ratio of the second pitch to the first pitch is more than 1 and less than 1.5.

10 20. The method of claim 16, wherein the first section has a third group of at least one magnetic core.

21. The method of claim 20, wherein the third group of at least one magnetic core is provided within the second group of at least one magnetic frame member.

15 22. The method of claim 21, wherein the third group of at least one magnetic core has a third direction of magnetic poles, and the third direction is the same as the first direction.

23. The method of claim 22, wherein the first section includes a third number of at least one magnetic core, and the third number is the same as the first number.

20 24. The method of claim 23, wherein the third number is more than 1, a third pitch of the magnetic frame members included in the third group is smaller than a second pitch of the magnetic frame members included in the second group.

25 25. The method of claim 24, wherein a ratio of the second pitch to the third pitch is more than 1 and less than 1.5.

26. The method of claim 25, wherein the first, second and third numbers are 4, 3 and 4, respectively.

27. A method for making an object using a lithography process, wherein the lithography process utilizes the method of claim 14.

28. A method for patterning a wafer using a lithography process, wherein the lithography process utilizes the method of claim 14.

30 29. A lithography system comprising:

an illumination system that irradiates radiant energy;

a positioning apparatus that disposes a substrate on a path of the radiant energy;  
and

5 a system that provides support between a first structure and a second structure,  
the system including,

10 a first section having a first group of at least one magnetic frame member, the first section being coupled to the first structure; and

a second section having a second group of at least one magnetic frame member, the second section being coupled to the second structure; wherein

30. An object manufactured with the lithography system of claim 29.

31. A wafer on which an image has been formed by the lithography system of claim 29.